UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,046	12/27/2005	Manfred Fuchs	38634-23US	9725

32300   7590   04/06/2010
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EXAMINER
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ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
04/06/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Amendment filed 01/19/2010* .
2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 13-22* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-11 and 13-22* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____ .
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____ .
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____ .

DETAILED ACTION

Response to Remarks

1.   The Office Action has been issued in response to amendment filed January 19,

2010. Claims 1-2, 4-8, 11, and 13-22 are pending. Applicant's arguments have been

carefully and respectfully considered in light of the instant amendment, and are not

persuasive. Accordingly, this action has been made FINAL

Status of Claims

2.   Claims 1-2, 4-8, 11, and 13-22

Response to Arguments

3.   Applicant argues on page 5 that Braun does not teach "a confidence interval

overlaid in three dimensions relative to a three-dimensional anatomical image".

However, it is noted that the features upon which applicant relies (i.e., a confidence

interval overlaid in three dimensions relative to a three-dimensional anatomical image)

are not recited in the rejected claim(s). Although the claims are interpreted in light of

the specification, limitations from the specification are not read into the claims. See *In*

re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicant also argues

that Braun at most teaches a display adapted to display an overlay of a 2D

neuromagnetic reconstruction on a MR image, with arrows indicating strength and

direction of current density; however, the Examiner respectfully disagrees. Applicant

pointed to Fig 3 which shows 2D, however completely disregarded Fig 2 which teaches

the disclosed 3D limitation overlaid with a head model instead of an MRI or CT. Thus

the Examiner introduced Fucks who discloses a 3D MRI overlay, and therefore, cures

the deficiencies of Braun. Therefore, the combination of Braun and Fucks clearly

teaches all the limitations of claim 1.

On page 6 of the response, Applicant argues that Toshimasa fails to disclose

"displaying the confidence interval on a three-dimensional anatomical map, wherein the

confidence interval is displayed in its anatomical position in three dimensions", however,

the Examiner disagrees. First note that Braun clearly discloses displaying the

confidence interval in three-dimensional however, failed to mention wherein the

confidence interval is displayed in its anatomical position and map. Thus the Examiner

introduced Toshimasa to cure the deficiencies of Braun.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 1-2, 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Braun et al (NPL Document titled: "Confidence Interval of Single Dipole Locations

Based on EEG Data") in view of Fuchs et al, (NPL Document titled: "Functional imaging of neuronal brain activities: overlay of distributed neuromagnetic current density images and morphological MR images ").

As to independent claim 1, Braun discloses a method (method for confidence interval of single dipole locations based on EEG Data, see title) comprising: modeling neural activity as a single equivalent current dipole (ECD) (see page 33, Methods section, [p] [005] - where the single dipole location is estimated); calculating a best fit dipole coordinate for each dipole (see page 34, method section, [p][007]); computing a confidence interval for each dipole coordinate (see page 34, method section, [p][008]); and displaying the confidence interval (see Fig 2, where the confidence level is displayed). However, Braun does not expressly disclose wherein the confidence interval is overlaid on an image obtained through the use of Magnetic Resonance Imaging. Fucks discloses a method for functional imaging of neuronal brain activities (see title) wherein the confidence interval is overlaid on an image obtained through the use of Magnetic Resonance Imaging (see Fig. 3, where a neuromagnetic functional image is overlaid unto a 3D MRI). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modified the method for confidence interval of single dipole locations based on EEG Data of Braun with the method for functional imaging of neuronal brain activities of Fuchs to accurately localize equivalent dipoles with residual functions that results in higher accuracy and a faster convergence in the equivalent dipole localization, thus correlating location, extent and direction of neural activities.

As to claim 2, Braun teaches the method wherein the step of computing a confidence interval includes computing an error ellipsoid (see page 38, discussion section, [p][004]).

As to claim 3, Braun teaches the method, wherein the step of computing an error ellipsoid includes computing a main axes of the error ellipsoid using a Singular Value Decomposition (see page 38, introduction section, [p][007], lines 14-16).

As to claim 4, Braun teaches the method, wherein the step of modeling includes assuming the geometric and conductive properties of cortical tissue (see page 37, discussion section, [p][001], lines 18-19).

As to claim 5, Braun teaches the method, wherein the step of computing a confidence interval includes the step determining field distributions for a best fit dipole coordinate and for a modified best fit dipole coordinate (see page 34, method section, [p][008]).

As to claim 6, Braun teaches the method, wherein the step of computing a confidence interval includes the step of computing the difference field distribution (see page 31, introduction section, [p][002], lines 8-10).

As to claim 7, Braun teaches the method, wherein the step of computing a

confidence interval includes the step of performing a signal to noise ratio analysis (see

abstract).

As to claim 8, Braun teaches the method and further comprising defining a

Cartesian coordinate system (see Fig 1).

6.   Claims 11 and 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Braun et al (NPL Document titled: "Confidence Interval of Single Dipole Locations

Based on EEG Data") in view of Fucks et al, (NPL Document titled: "Functional imaging

of neuronal brain activities: overlay of distributed neuromagnetic current density images

and morphological MR images ") as applied to claims 1 further in view of Toshimasa et

al, (NPL Document titled: "The Accuracy of Localizing Equivalent Dipoles and the

Spatio-Temporal Correlations of Background EEG").

As to independent claim 17, all the limitations are discussed above except:

wherein the confidence interval is displayed in its anatomical position. The combination

of Braun and Fuchs as a whole does not teach wherein the confidence interval is

displayed in its anatomical position. Toshimasa discloses a method for the accurate

localizing of equivalent dipoles (see title) wherein the confidence interval is displayed in

its anatomical position (see section1, page 118, subsection IV, part d). At the time of the

invention, it would have been obvious to a person of ordinary skill in the art to modified

the method for confidence interval of single dipole locations based on EEG Data of

Braun with the method for the accurate localizing of equivalent dipoles Toshimasa to

accurately localize equivalent dipoles with residual functions that results in higher

accuracy and a faster convergence in the equivalent dipole localization (see abstract).

As to independent claim 11, this claim differs from claim 1 only in that claim 10 is

apparatus whereas, claim 1 is method and the limitations a detector, a display and a

processor are additively recited. Note the discussion above, Toshimasa teaches a

system comprising: a detector (see page 1118, part d), a display (see page 115, section

II, [p][005], lines 6-7), and a processor (see page 115, section II, [p][005], lines 6-7),

further comprising an imaging source in communication with the processor (see page

1118, part d), wherein the three dimensional anatomical image is obtained through the

use of the image device (see Fig 2).

As to claim 13, note the discussion above, Toshimasa teaches the, wherein the

imaging source is an MRI unit (see page 1118, part d).

As to claim 14, note the discussion above, Fucks teaches the, wherein the

imaging source is a CT scan (see [p][001] of Fucks).

As to claim 15, Braun teach the apparatus, wherein the detector is an

electroencephalogram (see page 31, introduction section, [p][001], line 1).

As to claim 16, Braun teach the apparatus, wherein the detector is a magnetoencephalogram see page 31, (introduction section, [p][001], lines 1-2).

As to claim 18, Braun teaches the method, wherein the step of computing a confidence interval includes computing a confidence ellipsoid axes from estimated noise level and different fields strengths (see page 34, method section, [p][008]);).

As to claim 19, note the discussion above, Toshimasa teaches the method, wherein the step of displaying includes the step of receiving a digital image (see page 1118, part d).

As to claim 20, Braun teaches the method, wherein the step of computing a confidence interval includes the step of computing a confidence volume (see abstract).

As to claim 21, Braun teach the apparatus, wherein the detector comprises electroencephalogram sensors (introduction section, [p][001], lines 1-2).

As to claim 22, Braun teach the apparatus, wherein the detector comprises electroencephalogram sensors (introduction section, [p][001], lines 1-2).

Conclusion

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Inquiries

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to ANDRAE S. ALLISON whose telephone number is

(571)270-1052. The examiner can normally be reached on Monday-Friday, 8:00 am -

5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Vu Le can be reached on (571) 272-7223. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vu Le/   /A. S. A./
Supervisory Patent Examiner, Art Unit 2624   Examiner, Art Unit 2624